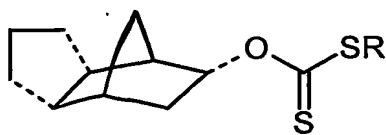


CLAIMS

1. A compound of formula (I)



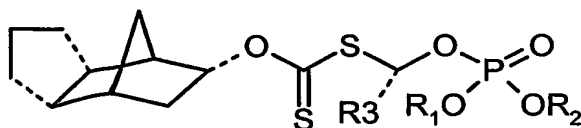
(I)

wherein R is a heteroatom substituted alkyl moiety;  
or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1, wherein R is an alkyl or alkoxy moiety.

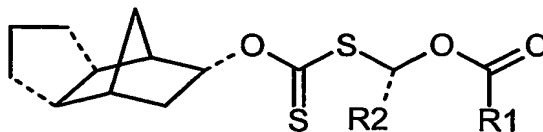
3. The compound of claim 2, wherein R is an alkoxyphosphoryl or alkoxyacyl moiety.

4. The compound of claim 3, wherein the compound of formula (I) is:



wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

5. A compound of claim 3, wherein the compound of formula (I) is:



wherein  $R^1$  and  $R^2$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

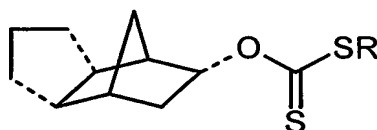
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6. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable excipient.

7. A method of treating a disease or disorder in a subject, comprising:

10

- a) obtaining a composition comprising a compound of formula (I):



(I)

wherein R is a heteroatom substituted alkyl moiety;  
or a pharmaceutically acceptable salt thereof; and

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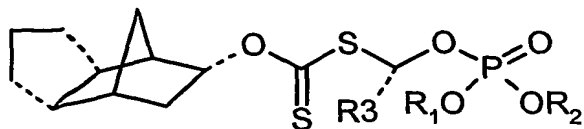
- b) administering a therapeutically effective amount of the composition to the subject.

8. The method of claim 7, wherein R is an alkyl or alkoxy moiety.

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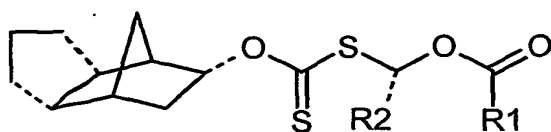
9. The method of claim 8, wherein R is an alkoxyphosphoryl or alkoxyacyl moiety.

10. The method of claim 9, wherein the compound of formula (I) is:



wherein  $R^1$ ,  $R^2$  and  $R^3$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

- 5            11. The method of claim 9, wherein the compound of formula (I) is:



wherein  $R^1$  and  $R^2$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

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12. The method of claim 7, wherein the subject is a mammal.

13. The method of claim 12, wherein the mammal is a human.

14. The method of claim 7, wherein the disease is an autoimmune disease, and  
inflammatory disease, a neurodegenerative disease, a disease associated with ischemia and  
15 reperfusion injury, trauma, atherosclerosis, ageing, cancer, viral infection, UV-induced radiation  
injury, or ionizing radiation-induced injury.

15. The method of claim 14, wherein the autoimmune disease is systemic lupus,  
chronic thyroiditis, Graves disease, autoimmune gastritis, autoimmune hemolytic anemia,  
autoimmune neutropenia, or thrombocytopenia.

- 20            16. The method of claim 14, wherein the inflammatory disease is rheumatoid arthritis,  
organ transplant rejection, graft versus host disease, endotoxemia, sepsis, septic shock, uveitis,  
inflammatory peritonitis, or pancreatitis.

17. The method of claim 14, wherein the neurodegenerative disease is Alzheimer disease, Parkinson's disease, Huntington's disease, Kennedy's disease, prion disease, multiple sclerosis, amyotrophic lateral sclerosis, or spinal muscular atrophy.

18. The method of claim 14, wherein the disease associated with ischemia and reperfusion injury is a stroke or myocardial infarction.

19. The method of claim 14, wherein the cancer is breast cancer, lung cancer, prostate cancer, ovarian cancer, brain cancer, liver cancer, cervical cancer, colon cancer, renal cancer, skin cancer, head & neck cancer, bone cancer, esophageal cancer, bladder cancer, uterine cancer, lymphatic cancer, leukemia, stomach cancer, pancreatic cancer, testicular cancer lymphoma, or multiple myeloma.

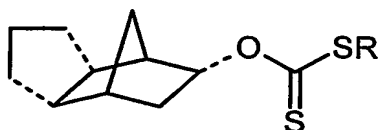
20. The method of claim 14, wherein the trauma is traumatic brain injury spinal cord injury, or burn injury.

21. The method of claim 7, wherein the disease or disorder is a disease or disorder associated with oxidative stress.

22. The method of claim 7, wherein administration of the composition comprises oral administration, intravenous administration, intraarterial administration, topical administration, intratumoral administration, regional administration, intrathecal administration, intraperitoneal administration, intraocular administration, or inhalational administration.

23. A method of protecting normal tissue in a subject from the toxicity associated with treatment of a disease with ionizing radiation or a chemotherapeutic agent, comprising:

- a) obtaining a composition comprising a compound of formula (I):



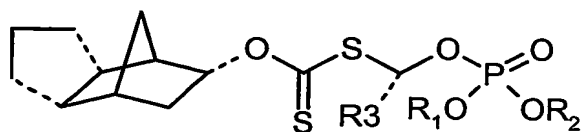
(I)

wherein R is a heteroatom substituted alkyl moiety;

or a pharmaceutically acceptable salt thereof; and

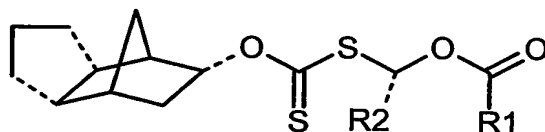
- b) concurrently or consecutively administering to the subject a prophylactically effective amount of the composition and the ionizing radiation or chemotherapeutic agent.

24. The method of claim 23, wherein R is an alkyl or alkoxy moiety.
25. The method of claim 24, wherein R is an alkoxyphosphoryl or alkoxyacyl moiety.
26. The method of claim 25, wherein the compound of formula (I) is:



wherein  $R^1$ ,  $R^2$  and  $R^3$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

27. The method of claim 25, wherein the compound of formula (I) is:



wherein  $R^1$  and  $R^2$  are independently H or an alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

28. The method of claim 23, wherein the subject is a mammal.
29. The method of claim 28, wherein the mammal is a human.
30. The method of claim 23, wherein the disease is an autoimmune disease, and inflammatory disease, a neurodegenerative disease, a disease associated with ischemia and reperfusion injury, trauma, atherosclerosis, ageing, cancer, or a viral infection.
31. The method of claim 30, wherein the disease is cancer.

32. The method of claim 31, wherein the cancer is breast cancer, lung cancer, prostate cancer, ovarian cancer, brain cancer, liver cancer, cervical cancer, colon cancer, renal cancer, skin cancer, head & neck cancer, bone cancer, esophageal cancer, bladder cancer, uterine cancer, lymphatic cancer, leukemia, stomach cancer, pancreatic cancer, testicular cancer lymphoma, or multiple myeloma.

33. The method of claim 23, wherein the chemotherapeutic agent is doxorubicin, daunorubicin, methotrexate, tamoxifen, paclitaxel, topotecan, LHRH, mitomycin C, etoposide, tomudex, podophyllotoxin, mitoxantrone, colchicine, endostatin, fludarabin, mitomycin, actinomycin D, bleomycin, cisplatin, VP16, an enediyne, taxol, vincristine, vinblastine, carmustine, melphalan, cyclophosphamide, chlorambucil, busulfan, lomustine, 5-fluorouracil, gemcitabine, BCNU, or camptothecin.

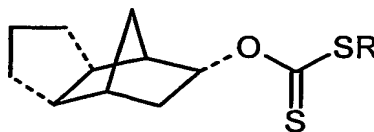
34. The method of claim 23, wherein administering a prophylactically effective amount of the composition comprises oral administration, intravenous administration, intraarterial administration, topical administration, local administration into a tumor, intrathecal administration, intraperitoneal administration, intraocular administration, or inhalational administration.

35. The method of claim 23, wherein the prophylactically effective amount of the composition and the ionizing radiation or chemotherapeutic agent are concurrently administered.

36. The method of claim 23, wherein the prophylactically effective amount of the composition and the ionizing radiation or chemotherapeutic agent are consecutively administered.

37. A method of treating a disease or disorder in a subject, comprising:

a) obtaining a composition comprising a compound of formula (I):



(I)

wherein R is a heteroatom substituted alkyl moiety;

or a pharmaceutically acceptable salt thereof; and

- b) concurrently or consecutively administering a therapeutically effective amount of the composition and ionizing radiation or a chemotherapeutic agent to the subject.

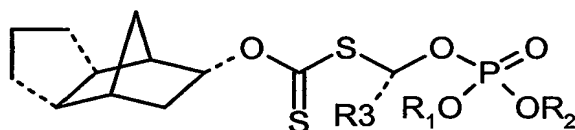
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38. The method of claim 37, wherein R is an alkyl or alkoxy moiety.

39. The method of claim 38, wherein R is an alkoxyphosphoryl or alkoxyacyl moiety.

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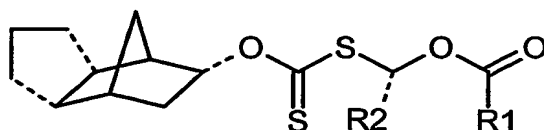
40. The method of claim 39, wherein the compound of formula (I) is:



wherein  $R^1$ ,  $R^2$ , and  $R^3$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

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41. The method of claim 39, wherein the compound of formula (I) is:



wherein  $R^1$  and  $R^2$  are independently H or alkyl moieties;  
or a pharmaceutically acceptable salt thereof.

42. The method of claim 37, wherein the subject is a mammal.

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43. The method of claim 42, wherein the mammal is a human.

44. The method of claim 37, wherein the disease is cancer.

45. The method of claim 44, wherein the cancer is breast cancer, lung cancer, prostate cancer, ovarian cancer, brain cancer, liver cancer, cervical cancer, colon cancer, renal cancer, skin cancer, head & neck cancer, bone cancer, esophageal cancer, bladder cancer, uterine cancer, lymphatic cancer, leukemia, stomach cancer, pancreatic cancer, testicular cancer lymphoma, or multiple myeloma.

46. The method of claim 37, wherein the therapeutically effective amount of the composition and the ionizing radiation or chemotherapeutic agent are concurrently administered.

47. The method of claim 37, wherein the therapeutically effective amount of the composition and the ionizing radiation or chemotherapeutic agent are consecutively administered.